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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/804,534	03/12/2001	John Joseph Garrity	UK998125US2	9748

7590 07/17/2002
IBM Corporation, N50/040-4
1701 North Street
Endicott, NY 13760

EXAMINER

WILLIAMS, ALEXANDER O

ART UNIT	PAPER NUMBER
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2826

DATE MAILED: 07/17/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/804,534

Applicant(s)

GARRITY ET AL.

Examiner

Alexander O Williams

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 April 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 13-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 09/452259.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Serial Number: 09/804534 Attorney's Docket #: UK998125US2
Filing Date: 3/12/2001: claimed foreign priority to 12/9/98

Applicant: Garrity et al.

Examiner: Alexander Williams

Applicant's Pre-Amendment in Paper # 2, filed 3/12/01 has been acknowledged.

Applicant's Supplemental Pre-Amendment in Paper # 4, filed 4/9/01 has been acknowledged.

Applicant's Second Supplemental Pre-Amendment in Paper # 5, filed 3/12/01 has been acknowledged.

Claims 1 to 12 have been canceled.

Applicant is reminded that in order for a patent issuing on the instant application to obtain the benefit of priority based on priority papers filed in parent Application No. 09/452259 under 35 U.S.C. 119(a)-(d) or (f), a claim for such foreign priority must be made in this application. In making such claim, applicant may simply identify the application containing the priority papers.

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Claims 13 to 16 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Itai et al. (U.S. Patent # 5,838,069) in view of Crane, Jr. et al. (U.S. Patent # 5,541,449).

In claim 13, Itai et al. (figures 1 to 9) specifically **figure 9** show a substrate **PCB** for the attachment of a ball grid electronic package **10** thereto by means of solder balls **8** and solder paste **7** wherein connection is made between a contact **4** on the ball grid array electronic package and a solder ball by means of a first joining medium **7** and between said solder ball and a contact **C** arranged on the substrate by means of a second joining medium **7'** (**see figures 8A and 9, column 7, line 55 to column 11, line 17**), but fail to explicitly show wherein the contact arranged on the substrate is substantially quadrilateral in shape. However, Itai et al. does disclose the contact being of a round shape.

Crane, Jr et al. is cited for showing a semiconductor chip carrier affording a high density external interface. Specifically, Crane, Jr. et al. (**figures 8 and 9**) discloses solder balls **23** and a variety of contact/pad **18** configurations including shapes of quadrilateral/square, rectangle, tetrahedron, hexagon, etc. (see figures 20-31) where the dimension such as length, width, etc. is larger than the diameter of the round solder balls for the purpose of improving the functionality and performance in a flip chip/BGA package.

In claim 14, the combination with Crane, Jr. et al.'s contact **18** arranged on the substrate is substantially square in shape.

In claim 15, the combination with Itai et al.'s joining medium **7,7'** is solder paste.

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In claim 16, either reference show the solder ball has an initial, substantially round shape prior to making said connections.

Therefore, it would have been obvious to one of ordinary skill in the art to use Crane, Jr. et al.'s quadrilateral shape contacts to modify Itai et al.'s contacts for the purpose of improving the functionality and performance in a flip chip/BGA package.

The listed references are cited as of interest to this application, but not applied at this time.

Field of Search	Date
U.S. Class and subclass: 257/738,737,734,777-781,786,690,692,693,668,772,703 228/180.22,103,104,105,254	7/11/02
Other Documentation: foreign patents and literature in 257/738,737,734,777- 781,786,690,692,693,668,772,703 228/180.22,103,104,105,254	7/11/02
Electronic data base(s): U.S. Patents	7/11/02

Papers related to this application may be submitted to Technology Center 2800 by facsimile transmission. Papers should be faxed to Technology Center 2800 via the Technology Center 2800 Fax center located in Crystal Plaza 4-5B15. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Technology Center 2800 Fax Center number is (703) 308-7722 or 24. Only Papers related to Technology Center 2800 APPLICATIONS SHOULD BE FAXED to the GROUP 2800 FAX CENTER.

Any inquiry concerning this communication or any earlier communication from the examiner should be directed to **Examiner Alexander Williams** whose telephone number is **(703) 308-4863**.

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Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center 2800 receptionist** whose telephone number is **(703) 308-0956**.

7/11/02

A handwritten signature in black ink, appearing to read 'A. Williams', with a stylized flourish at the end.

Primary Examiner
Alexander O. Williams